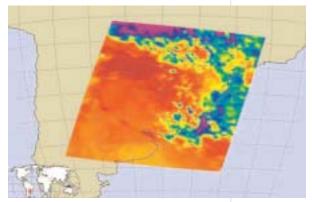
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# Aqua data help with forecasts

By Alan Buis



Data from Atmospheric Infrared Sounder experiment shows various levels of brightness over southeastern South America.

our weatherperson's job just got a little easier, thanks to new data now available from advanced weather instruments aboard NASA's Aqua satellite.

The new data are the most accurate, highest-resolution measurements ever taken from space of the infrared brightness (radiance) of Earth's atmosphere. This information can be used to make more accurate predictions of weather and climate.

The data come from two microwave sounding instruments that are part of the JPL-managed Atmospheric Infrared Sounder experiment: the Atmospheric Infrared Sounder and the Advanced Microwave Sounding Unit.

With its visible, infrared and microwave detectors, the Atmospheric Infrared Sounder experiment provides a three-dimensional look at Earth's weather. Working in tandem, its instruments can make simultaneous observations from space all the way to Earth's surface, even in the presence of heavy clouds. With more

than 2,400 channels sensing different regions of the atmosphere, the system creates a global, three-dimensional map of atmospheric temperature and humidity and provides information on clouds, greenhouse gases and many other atmospheric phenomena.

"The Atmospheric Infrared Sounder experiment is demonstrating high sensitivity and accuracy," said Dr. Moustafa Chahine, science team leader at JPL. "Meteorologists around the

world have been eagerly awaiting the availability of this processed Atmospheric Infrared Sounder data, and are already reporting measurable increases in the accuracy of their short-term weather predictions. NASA and the world's weather prediction agencies can now also use Atmospheric Infrared Sounder experiment data to better track severe weather events, like hurricanes."

Scientists from various organizations echoed

Dr. Tony McNally of the European Center for Mid-range Weather Forecasts in Reading, England, reported that the use of Atmospheric Infrared Sounder experiment data resulted in "a small but consistent positive impact on forecast quality in all areas."

Dr. Hank Revercomb, director of the Space Science and Engineering Center at the University of Wisconsin, called the experiment "a virtual gold mine of information."

Dr. Louis Ucellini, director of the National Oceanic and Atmospheric Administration's National Centers for Environmental Prediction, said adopting data from the Atmospheric Infrared Sounder experiment is "our number one priority."

Chahine said more advanced data products are expected to become available later this year. The data will include atmospheric temperature and humidity profiles as well as additional environmental measurements on various types of clouds, particularly the thin veil of cirrus clouds that cover Earth. He also expects new data on concentrations of greenhouse gases, such as carbon dioxide, methane, carbon monoxide and volcanic sulfur dioxide.

The National Oceanic and Atmospheric Administration is continuing to evaluate the new data, learning how to integrate it and gaining confidence in its accuracy. When that process is completed this summer, the agency will begin integrating the data into existing weather prediction models used by its National Centers for Environmental Prediction. Six of the world's leading weather-prediction centers will do the same.

# Galex is off and flying

The JPL-managed Galaxy Evolution Explorer spacecraft was successfully launched April 28 from a Pegasus XL rocket released by an L-1011 aircraft off the coast of Florida's Cape Canaveral Air Station.

On Saturday, May 3, engineers began turning on the science instrument. So far, they have powered up both the digital processing unit, which houses the main computer, and the detector front-end electronics box, which contains the photon discrimination and processing logic. The spacecraft computer, mechanisms and heaters are operating properly, and telemetry and data have been routinely transmitted to Earth.

Galex successfully opened its telescope cover the morning of May 6. The cover is now safely stowed against the side of the spacecraft, where it will remain for the duration of the mission.

The telescope will begin gathering photons—a milestone known as first light—on or about May 19.

## Loston offers lesson on NASA's education plans

By Mark Whalen

r. Adena Williams Loston,
NASA's Associate Administrator for Education, visited JPL
last month for the first time since
her appointment to the job about
six months ago. Loston met with
education, public engagement and
communications representatives to
discuss current initiatives and also
spelled out the efforts to organize
and enhance agency education
programs.

"NASA Administrator Sean O'Keefe is very interested in



JPL Director Dr. Charles Elachi with Dr. Adena Williams Loston during her April 24 visit to JPL.

inspiring the next generation of explorers," she said. O'Keefe seeks a strategic focus and leadership across the agency.

Noting that in the past, education

work was handled in 17 different locations at the agency, she said, "the focus now is on a unifying voice and direction for NASA, a national agenda."

Working with teachers, students and parents has never been more important for NASA, she said. In the next three to five years, 60 percent of the agency's workforce will be eligible for retirement, which is a "crucial problem for the agency," she said.

In order to help overcome this, Loston mentioned four major initiatives underway in her office:

- NASA's educational goals for both pre-college and postsecondary education will focus on a pipeline called "STEM," an acronym for science, technology, engineering and math.
- One of Loston's goals is to have NASA employees to go out to schools and "share why we do what we do."
- Ensure that the NASA Education Program is properly investing taxpayers' resources.
- Engage underrepresented students, educators and researchers.

In addition, several programs are underway to reach out to students and educators:

Science and Technology Scholarship Program. In what she termed a "corporate recruitment strategy," Loston will ask each NASA associate administrator about their workforce needs over the next three to five years. Her office will identify institutions that will provide students with the needed skill sets, and NASA will fully fund students' tuition for a commitment come back and work for the agency.

Loston said she will work with NASA's human resources and equal opportunity leadership on this initiative. A report on its progress is due to be presented to O'Keefe by September.

NASA Explorer Schools. Each
NASA center will host five schools
for a week during the summer.
Each school will send four teachers
plus an administrator, such as a
principal or assistant principal.

NASA will provide curriculum targeted for students in grades 5 through 8, and teachers will come up with an implementation plan for their school. This is a three-year partnership.

Educator Astronaut Program. An effort to recruit K-12 teachers to be in the astronaut corps. Partici-

pants can qualify with a degree in

education, but must also take a

required number of hours of in-

struction in the STEM subjects.

More than 4,000 teachers were nominated. Between 200 and 300 will be down-selected by a group of teachers, then 2 to 6 will be approved as astronauts. Nominations closed May 2.

"Teachers want the resources you have developed," Loston said. "We want to engage as many students as we can, and make a difference."

Students will begin to notice a difference in their textbooks soon, she said, noting that some publishers have included chapters on NASA in their upcoming publications.

Loston also lauded the efforts put forth in informal education, where the agency works with planetariums, museums, etc. "Not all education takes place in the classroom," she acknowledged.

She noted the only three federal departments with education as part of their mandate are NASA, the Department of Education and the National Science Foundation.

"NASA is not trying to overtake the role of the Department of Education," she said. "The Department of Education wants us at the table. We at NASA have the tools that can delight, inspire and excite the next generation."

# N*ews* B*riefs*



**Dr. Gerard Holzmann** 



DR. GERARD HOLZMANN, a leader in software verification and validation, has joined JPL to further develop the newly established Laboratory for Reliable Software.

The Laboratory for Reliable Software will study technology, methods, tools and techniques to ensure high quality in JPL's mission critical software systems. The studies will extend from the beginning of the software lifecycle, through the design and testing stages, and ultimately to the operations monitoring aboard highly autonomous spacecraft.

Holzmann will lead and conduct research, development and applications as principal computer scientist in the research program, and will provide project consulting in software verification and validation.

Holzmann previously served as director of Computing Principles Research at Lucent Technologies' Bell Labs in Murray Hill, NJ.

"The pioneering research of Dr. Holzmann and the proof of its effectiveness on projects of significant size and complexity, as well as his worldwide leadership, make him the obvious choice to lead our new initiatives in this area," said DR. DAVID ATKINSON, leader of Computing Area Initiatives and deputy manager of the Information Technology and Software Systems Division. "JPL will provide him with the hardest problems he can imagine, and this is exciting for both him and JPL."

The Association for Computing Machinery presented Holzmann with the prestigious Software Systems Award for development of Spin, a program devoted to the efficient detection of defects in network computers. Software engineers at JPL who develop systems for both flight and ground applications have used Spin.

"JPL has some of the most difficult software challenges on the planet, and these will certainly drive my research," said Holzmann. "I look forward to working with the talented and motivated team at JPL on the noble goals of space exploration."

Holzmann received his master's degree in electrical engineering and his doctorate in technical sciences from Delft University of Technology, the Netherlands.

#### Solar System Ambassador honored

LOUISE STIVERS, a teacher in the Los Angeles Unified School District and a JPL Solar System Ambassador, recently received the Presidential Award for Excellence in Science Teaching, the nation's highest teaching honor.

Stivers teaches second grade at Buchanan Street Magnet Center in Highland Park. She was honored in a week-long series of special ceremonies in Washington, D.C. along with a select group of teachers from throughout the United States.

The Solar System Ambassadors Program is a informal education effort accomplished by motivated volunteers in all 50 states, Puerto Rico, and the Kadena Air Force Base in Okinawa who communicate information about JPL's exciting discoveries and plans for future exploration. These space enthusiast volunteers are trained using online materials and interact with key mission personnel, thereby personalizing each ambassador's involvement with the program. Ambassadors are considered as extended members of each mission's team.

Recipients of the Presidential
Award of Excellence are nominated by
principals, teachers, students and
members of the public, and are reviewed first at the state/jurisdiction
level; at the national level a committee of distinguished scientists, educators, administrators and past
awardees rank the finalists, the
National Science Foundation then
presents the committee's recommendations to the White House.

Stivers was a state finalist for the 1999 Presidential Awards for Excellence in Science and the 2000 California Science Teachers Association's Distinguished Science Teacher.

#### Systems engineering conference set

The Los Angeles Chapter of the International Council on Systems Engineering is conducting a one-day conference at the Boeing Division Conference Center in Long Beach on Saturday, June 7, from 8:30 a.m. to 5 p.m. Registration begins at 8 a.m.

Numerous technical presentations and a panel discussion are planned. Keynote speaker will be Lieutenant General BRIAN ARNOLD, commander of the Space and Missile Systems Center, Air Force Space Command, Los Angeles Air Force Base.

Presentations were solicited for the conference in the areas of education and research; systems architecture; measurement; modeling and tools; processes and materials; applications; initiatives; management; and standards.

TONY FREEMAN, manager of JPL's Mission and Systems Architecture Section (311), is the event's technical co-chair. For more information, reach him at ext. 4-1887 or visit <a href="http://www.incose-la.org">http://www.incose-la.org</a>.

#### New space-related books available

The NASA History Office notes the publication of three new space-related books, including "Voyager's Grand Tour: To the Outer Planets and Beyond," published by the Smithsonian Institution Press. It is available for purchase online from http://www.sipress.si.edu/books/titles\_books/1-58834-124-0.html.

"Testing Aircraft, Exploring Space: An Illustrated History of NACA and NASA" is the latest volume in the Johns Hopkins New Series in NASA History, available online at <a href="http://www.press.jhu.edu/press/books/titles/s03/s03bite.htm">http://www.press.jhu.edu/press/books/titles/s03/s03bite.htm</a>.

"On the Frontier: Experimental Flight at NASA Dryden" has also been published by Smithsonian Press. It is avail-able for purchase at http://www.sipress.si.edu/books/titles\_books/1-58834-134-8.html.

For more information, visit http://www. hq.nasa.gov/office/pao/History/on-line html.

# Special Events Calendar

Ongoing Support Groups

Alcoholics Anonymous—Meetings are available. Call the Employee Assistance Program at ext. 4-3680 for time and location.

Caregivers Support Group—Meets the first Thursday of the month at noon in Building 167-111 (The Wellness Place). For more information, call the Employee Assistance Program at ext. 4-3680.

Codependents Anonymous—Meeting at noon every Wednesday. Call Occupational Health Services at ext. 4-3319.

Gay, Lesbian and Bisexual Group— Meets the first Friday and third Thursday of the month at noon in Building 111-117. Call the Employee Assistance Program at ext. 4-3680 or Randy Herrera at ext. 3-0664.

Parents Group for Children With Special Needs—Meets the second Thursday of the month at noon in the Wellness Place, Building 167-111.

Working Parents Support Group— Meets the third Thursday of the month at noon in Building 167-111. For more information, call the Employee Assistance Program at ext. 4-3680.

Friday, May 9

"How Asian American Values Can Be Transmitted through Cultural Tales"—Dr. Jeffrey Mio, professor of behavioral science at Cal Poly Pomona, will speak at noon in the 167 conference room. The event is presented by JPL's Asian American Council in celebration of Asian Pacific American Heritage Month.

Saturday, May 10

Caltech Bands—This concert will feature the combined efforts of the Caltech-Occidental Concert Band, the two Caltech Jazz Bands and the Caltech Chamber Singers. The free show will be held at 8 p.m. in Beckman Auditorium. For more information, call (626) 395-4652.

Folk Music—Sparky and Rhonda Rucker, who specialize in Americana music with an African American perspective, will perform at 8 p.m. in Caltech's Dabney Lounge. Tickets are \$15 for adults, \$5 for children under 12. For more information, call (626) 395-4652 or check the Folk Music Society website at <a href="http://www.folkmusic.caltech.edu">http://www.folkmusic.caltech.edu</a>.

Tuesday, May 13

JPL Stamp Club—Meeting at noon in Building 183-328.

Wednesday, May 14

JPL Amateur Radio Club—Meeting at noon in Building 238-543.

JPL Toastmasters Club—Meeting at 5 p.m. in the 167 conference room. Call Roger Carlson at ext. 4-2295 for information.

Thursday, May 15

"A Woman's Money, A Woman's Future"—This TIAA/CREF workshop, held in Building 180-101 from 10 a.m. to noon, will help women make the most of their money no matter their phase of life, just starting out, married with a family, starting over, or in the golden years.

Conference Registration—Early registration deadline for the International Conference on Space Mission Challenges for Information Technology, the first forum to gather system designers, engineers, scientists, practitioners and space explorers for the objective of advancing information technology for space missions. The event will be held July 13-16 at the Pasadena Conference Center and will provide an excellent opportunity for fostering technical interchange on all hardware and software aspects of information technology applications in space missions. For registration and other information, log on to http://smc-it.jpl.nasa.gov.

TIAA/CREF Enrollment—This workshop from noon to 1 p.m. in Building 180-101 is designed to assist employees newly eligible for the JPL/Caltech TIAA/CREF retirement plan with selection of investment options and the completion of their enrollment forms.

Tuesday, May 20

Investment Advice—Fidelity will offer one-on-one counseling. For an appointment, call (800) 642-7131.

Wednesday, May 21

"Quaoar and the Edge of the Solar System"—Dr. Michael Brown, Caltech associate professor of planetary astronomy, will lecture at 8 p.m. in Caltech's Beckman Auditorium. Free admission. For more information, call (626) 395-4652.

Thursday, May 22

Caltech Architectural Tour—The Caltech Women's Club presents this free service, which is open to the public. The tour begins at 11 a.m. and lasts about 1 1/2 hours. Meet at the Athenaeum front hall, 551 S. Hill St. For reservations, call Susan Lee at (626) 395-6327.

Friday, May 23

At the Keyboard—James Boyk will celebrate his 30th anniversary as Caltech pianist-in-residence with an 8 p.m. show in Dabney Lounge. For more information, call (626) 395-4652.

Ongoing

The Social Security representative will no longer offer one-on-one counseling appointments on Lab. Call the Benefits Office at ext. 4-3760 to arrange a telephone counseling appointment.



**Louise Stivers** 

Dr. Charles Elachi, left,

with a Space Act Award.

and Scott Fraser were

Bearman, Rusty Lansford

presents Dr. Greg Bearman

# Space Act Awards bestowed

More than \$131,000 was awarded to about 100 JPL technologists and contractors during April 22 cere-



presented to each contributor of the technology.

Award money to JPL technologists and contractors increased from \$21,000 in fiscal year 2001 (when five cases were submitted) to \$306,000 in fiscal year 2002 (89 cases were submitted). The \$131,750 awarded to the JPL winners by Director DR. CHARLES ELACHI represents the amount awarded since the beginning of fiscal year 2003, last October.

The awards are classified into three categories: Standard (less than \$2,000), Major (\$2,000 to \$5,000) and Exceptional, where at least one of the innovators receives \$5,000 or more. In 2002, JPL received eight Exceptional Awards, the highest number of all the NASA centers.

The awards were created as an incentive to disclose the technologies in a timely manner to maximize the benefits for NASA and society. The NASA Invention and Contributions Board determines award amounts. Congress gives NASA the authority to grant awards up to \$100,000 for each innovation. Recent awards have ranged from \$500 to more than \$50,000 for some truly valuable contributions, such as the recent winners of the NASA Invention of the Year and

A requirement for the award is that the government must have the right to use the innovation without payment of royalties. Most NASA-funded efforts automatically convey government royalty-free rights with the funding for contracts, grants or partnerships.

Other criteria include:

- New technology must be reported through the NBS website (http://nbs).

  The color of the col
- The technology is used or will be used in a mission or program that relates to NASA's space and aeronautical activities.
- A recommendation for NASA Tech Briefs, a Software Available for Public Release Award must have been received, or a NASA Patent Award. In the absence of any of these, the Innovative Technology Assets Management Office may make a recommendation based on the state of the technology.

The Invention and Contributions Board reviews applications on a quarterly basis. The next deadline for consideration is May 20, 2003. If you meet the criteria, call RANI KAMARGA at ext. 3-7995 for a preliminary questionnaire.

For more information, visit http://icb.nasa.gov/Annual\_Report.

Lab prepares for May 17-18 showcase

or the first time in two years, JPL will soon welcome the public for an Open House celebration. The event will be held May 17-18, from 9 a.m. to 5 p.m. each day.

Highlighted by exhibits, models and displays from the Earth, Mars, Solar System, Technology and Universe theme areas, visitors will have a great opportunity to learn about everything that is JPL. Lab staff members will be available to

answer questions about their work at many of the exhibits. Kids will have the opportunity to design their own constellation inside a plastic-bag "planetarium," build an interplanetary spacecraft, be "run over" by a lightweight, eight-wheeled rover, and more. Fun hands-on activities for preschool-age children will also be available.

Here's a sampling of what's coming up:

#### **Earth**

Research on oceans, solid Earth and the atmosphere

- Numerous Earth Science projects
- Kids can visit their "corner" to play an adventure game and come discover the planet we call home

Image Processing

Unique capabilities of the nine cameras on MISR, the Multi-angle Imaging Spectro-Radiometer. Stereo and 3-D images of Earth, along with videos and animation. Find out what a new instrument will tell us about Earth's surface, clouds, and particles in the air.

#### Universe

The Visible and Beyond

- · Discover how invisible radiation from space may hold the clues as to how galaxies, stars, and planets formed. Learn how scientists have already detected more than 100 planets orbiting stars outside of our solar system.
- · Science demonstrations: see yourself through a heat-sensitive infrared camera, or learn how scientists experiment with weightlessness without going into space.

Fun Physics

Experience the strange world of

### **Technology**

Robots, Cutting-Edge Technology, New Methods

- Watch URBIE the rover climb stairs; Spiderbot the robot walk; a moving android head; and a robotic hand with artificial muscles
- The latest in optical infrared cameras; an ultrasonic motor and water jet (low-power alternatives for future missions); demonstrations of an ultrasonic drill designed for use on surfaces of other planets, such as Mars
- Visit with Southern California high school teams that built robots with JPL engineers and volunteers

Instrument Systems Laboratory

· Animations, 3-D imaging, highdefinition television, and image processing.

### **Solar System**

Cassini-Huygens, Deep Impact, Genesis and Stardust

See models of the Huygens probe that will parachute through Titan's murky atmosphere: the first mission to look inside a comet: and both JPL sample return missions. Touch a meteorite and see the world lightest solid, aerogel.

New Millennium Program

#### **Other Exhibits**

Welcome to Outer Space

View this multimedia production about JPL's missions in von Kármán Auditorium, along with various space exhibits and a full-scale model of the Voyager spacecraft.

Deep Space Operations

Learn about the multiple roles of the huge antennas of the Deep Space Network from the gallery in the Space Flight Operations Facility. See a scale model of a possible array antenna of the future, an exhibit of space images and students' murals.

Regional Planetary Image Facility

An archive of images in many types of formats from past and present JPL missions. Part of a network of 18 NASA image facilities, RPIF has one of the largest collections of original Mars images and a full collection of planetary maps.

Spacecraft Assembly Facility Visit High Bay 2, the largest clean room at JPL.

Spacecraft Fabrication Facility Where a spacecraft goes from "Artto-Part"—from technical drawings to precision spacecraft components.

#### Mars

Mars Exploration Rover Mission Get an in-depth look at the In-Situ an indoor simulated Martian landscape. Engineers will explain fullscale models and simulate the pyrotechnic process that deploys by a lightweight rover and coloring their own rover.

## **General Information** and Security

Parking, Lab Access

- Employees and volunteers may park on Lab but must drive through the South Gate. Access to the Blue Lot will only be available from the west side of the lot; normal on-Lab access will be closed.
- Visitor parking will be in the West, Blue, East and Arroyo lots. Visitors may enter the East Lot via Arroyo Ave.
- Main Gate traffic will be restricted to outbound tour buses and emergency vehicles
- The Visitors Lot will be restricted to guests requiring parking for the disabled
- The primary pedestrian checkpoint will be at the Main Gate
- Visitors must ride parking lot buses from the East and Arroyo lots to the Main Gate; walking in from the East or South gates will be prohibited

Security

Security for the Open House is being enhanced for the safety and enjoyment of the public and JPL staff, with an increased presence of security guards and fire department personnel, as well as additional support from outside local law enforcement. Security will be supplemented by JPL's Urban Search and Rescue Team.

- All vehicles, persons and possessions will be subject to inspection
- Prohibited items include backpacks, ice chests, alcohol, illegal drugs, weapons, dangerous devices, explosives, skateboards, skates (including inline) and animals
- · Personnel should secure all sensitive items and lock all interior office and lab doors prior to event
- · For emergencies, from on-Lab phones dial 911; from cell phones,
- For non-emergencies, from on-Lab phones dial 4-3530; from cell phones, dial 818-354-3530.

It's not too late to help make this Open House an even greater event. If you can volunteer a half-day, full day or both days, call Public Services at ext. 4-0112.



# JPLers' kids have their day



members attended "Take Our Daughters and Sons to Work Day" on April 24. In addition to seeing how mom and dad do their work, kids enjoyed a number of exhibits and activities. At left, children and adults play hydrogen and oxygen atoms during a fuel cell demonstration; at center, a balloon is inflated to power a Mars Rover; at right, a visitor



#### etters

My family and I would like to thank everyone for the kindness and thoughtfulness after the passing of my mother. We would like to extend our sincere and deep appreciation for the flower sent by JPL.

Adriana Vicente and family

# **Lassings**

**VICTOR WHISENAND**, retired from Section 614, died Feb. 13. Whisenand, who worked at the Lab from 1957 to 1977, is survived by his wife, Mildreth, and sons Alan and Gary.

JOSEPH BRUMAN, 80, passed away March 30. Bruman worked at JPL from 1975 to 1987. He is survived by his daughter Janet, son Ray and sister Pauline McKim.

## lassifieds ر

For Sale

BABY ITEMS: stroller, Aprica, \$35; infant car seat, \$10; soft toys for car seat and stroller, \$5/ea.; large baby bathtub, \$5. 626/850-4378. BEDROOM SET, exc. cond., queen-size bed, 9draw dresser w/3-piece mirrors, bedside units, all w/inlay light fruit-wood veneer, pictures avail., \$1,800; HARP, Triplet Axline full Loveland levers, fleece carrying case, deluxe tuning key, exc. cond., \$2,400. 626/351-9150. BIKE, Schwinn tandem, five speed, exc. cond., \$300. 626/355-3201.

BREAST PUMP, Medala Pump-In-Style, attractive black case w/complete kit and manual, used moderately for 2 yrs, \$150/obo. 957-

BRIDAL GOWN SLIP, white, size 8, with netting underneath for fullness, exc. cond., worn once, retails for \$60, sell for \$25. 992-

0921. BUNK BED, queen bed/futon couch, navy blue, convertible below, twin above, black tubular metal frame, exc. cond., \$180. 952-8455. CARD SHUFFLER, Johnson, collectible item,

all-metal construction with the exception of the friction wheels which drive the cards and the carved-wood dowel handles, stands ~6" handle-high, and ~9" by 6", flanges and handle inclusive, \$35; PORT REPLICATOR, for IBM Thinkpad, works with T20, T21, A20, A21, or X, R series, like new, \$85; DIET TAPES, Jenny Craig, set of 14, \$50. 790-3899. CD CHANGERS, 100 disc AIWA DX-C100M

\$75; 200 disc, Sony CDP-CX240, \$150, 400 disc, Sony M555ES \$300/obo. 790-7129, Bill. CLOTHING, 2 pc./jacket & slacks, Jones of New York, jacket fully lined and slash pockets, new with tags, size 12, dark olive, retail 200 +, \$100/obo; 2 pc./jacket & slacks, Rena Rowan for Saville, white, lined, size 14 never worn, pockets still stitched, \$50/obo; JEWEL-RY, earrings, bracelets, rings, includes vintage, turquoise and gemstones. 626/398-

COFFEE MAKER Braun 10-cups white/black like new, \$30/obo. 626/791-6101.

COUCH AND CHAIR, sleeper, queen, solid wood frames, velour fabric, beige with large floral print, rust and brown colored, great cond., very clean, \$25 for the set. 909/948-

CRIB, wooden portable, w/mattress, exc. cond., made by NU-Line, also used as a playpen, \$30. 626/797-3310, evenings and

DESK, cherry, 3 drawers, 24" x 48", like new, \$150; TABLE, maple butcher block, 2" thick, 30" x 60", exc. cond.,  $\$200.\ 626/798\text{-}6588.$ DIGITAL CAMERA, Sony Cybershot DSC-P1, 3.3M pixels, tiny, hi res., movie capability, never used, \$329/obo. 687-8627, Alberto. DINING SET, 5-piece maple, 48" round, incl. two 11" expansion leaves and 4 armchairs, \$225. 248-2876.

DOG, Akita purebred, neutered female, 7 years old, price negotiable. 626/791-7800, John. DOG HOUSE, Dogloo XT for small dog, up to 45#, good cond., \$40. 626/303-1927.  $DOG\ HOUSE,\ Dogloo\ II,\ igloo\ style,\ vent\ in$ roof, outside dimensions about 36" x 36", for

medium-size dog, good cond., about 3 years old, \$40/obo. 909/596-4390. ENTERTAINMENT CTR CABINET, exc./new cond.

space-saver, 2 ft. x 2 ft. x 5 ft. high, wood w/smoky glass, 4 shelves w/bottom drawer for CDs/DVDs, \$100. 626/445-6677, after 6 p.m. FILM SCANNER, Olympus 35 mm, 4 megapixel, SCSI interface, PC and Mac compatible, includes cables, manuals and Camedia Pro Software, model ES-10, \$150. 626/797-5672.

GLASS HORSE, seen on Internet for \$60, \$35; HEPA FILTER, #13503, exc. cond., \$60; TYPE-WRITER, Smith Corona, electric, circa 1980, \$25; CAR COVER, Covercraft Spundra, 15'-16', almost new, \$25; BRACELET, gold, large, new, \$60. 618-6682.

LAWNMOWER, McLane, 7-blade, 17-inch reel type, looks ugly but works, recently sharpened, recent rebuilt motor, \$20; VACUUM CLEANER, Dirt Devil upright, all tools attached, new, \$45. 661/297-0219.

MOVING SALE: dining table, large, rose wood, classical Oriental style, w/8 chairs; armoire, decorative shelves, bookshelf, entertainment unit; washer, dryer, frig, stove, microwave. 626/840-4983, Chau.

MOVING SALE: computer desk, 3 drawer, blond wood w/keyboard drawer, 43" w x 30" t x 22" d, \$59; microwave, 1.3kw, white, very clean, \$49; free delivery to curbside in Pasadena area. vona@ai.mit.edu or 626/796 0610.

MOVING SALE: nearly new furniture in very good condition, all prices are obo; desk, pine, 2-drawer, \$200; chairs, 2 cafe-style, black metal w/ off-white cushions, \$80; TV/stereo cabinet, large, teak, \$850; bookcases, 2 Bonde style from Ikea, cherry finish, 14 x 86" & 28 x 86", \$275; end tables, 2 Indonesian teak with iron details, \$130; tables, small bedside, wood with drawer & shelf, \$225. 323/664-2672.

PHONE ACCESSORIES: Nokia 8290 and comparable phone, new, never used Li-Ion battery, \$29.95; battery, like new, \$19.95; car charger, new, \$9.95; home charger, \$19.95; swivel clip, \$14.95; leather case, new, \$9.95; Nokia 8290 Phone, with battery, \$59.95; buy all for \$125. 366-6134.

PRINT, signed by R.C. Gorman, "Woman in Orange," circa 1977; FILE CABINET, rolling, with shelf, \$10. 626/398-4960.

DVD PLAYER, Toshiba SD-3750 progressive scan, like new, features: 3:2 digital cinema progressive conversion, enhanced audio mode. dialogue expander, 540-line output, 4x digital picture zoom, CD/DVD text display for titled discs, plays audio CD, CD-R, CD-RW, video CD, cheapest price on web is \$199.95, sacrifice for \$100; ORGAN, Yamaha 415 electronic organ w/13 pedals, 3 keyboards, 144 rhythm patterns, \$2,000. 790-3899.

RUG, Chinese, mainly blue, about 10 x 14, \$400. 790-7129, Bill.

SCROLL SAW, 16" Sears Roebuck with blades and extras, \$50. 626/358-6810.

STAIR CLIMBER, Tunturi 401, variable resistance, with electronic display, you pick up, \$20. 323/268-6645, Priscilla.

SUITCASES, 2, Samsonite, full size, \$20/each; GARMENT BAGS, 2, Valpacs, \$15/each. 352-

TABLES top, indoor/outdoor, \$1,500; COMPUTER DESK, \$100; OFFICE CHAIR, \$35/obo. 248-1102. TABLE TOP, butcher-block hardwood, 60 x 28

x 1 inch, with legs, \$60. 248-9418. TEA SET, pottery, made by Maine artisan, nautical theme, matching lighthouse design on all pieces, incl. tea pot, creamer, sugar, platter, small serving bowl, 2 mugs, 2 Japanese tea cups, never used, \$100/set. 249-4316.

TOOL BOX, standard size truck, pewter gray, VG cond., \$75. 661/269-8877.

TOY WOOD CONSTRUCTION SET, Brio Mech Set 4, 152 pieces plus work board, vg cond., original cost ~\$150, sell for \$70; STEAM VAC-UUM, Hoover, good cond., \$50. 626/303-1927. TREES: red banana plant 5' tall, \$60/obo; Fish tail, 6' tall, \$80 obo. Fichus, >10' tall, braided, in 30" plastic pot, \$250/obo; ceramic bowl, gray, 2 diameter with planted geraniums, \$40/obo. 626/791-6101.

WASHER, Frigidaire Crown series, front load, stackable, controls on front, 5 cycle, heavy duty, extra large capacity, 1.5 years old, originally pd \$550, selling due to move, low water usage, \$300/obo. 626/627-7772.

WASHER AND DRYER, apartment/condo size, Whirlpool VG cond \$75/each 661/269-8877 WASHER & DRYER, both in good cond., Maytag extra lg. capacity washer \$190/obo; General Electric, heavy-duty, extra lg. capacity, 5-cycle, automatic dryer, \$190/obo. 545-0455, Lucia.

WEDDING GOWN, white duchess satin sheath by Amsale, low back, gorgeous detachable train, fit  $\sim$ sz. 4-6, elbow length white tulle veil, \$1,000 for set; FIGURINE, Lenox porcelain, bride & groom "wedding cake topper," 7", never used, original box,

wonderful wedding gift, \$50. 249-4316. Vehicles / Accessories

'99 CHRYSLER LHS, 4 dr., white, 26K mi., exc cond.,  $\$12\mbox{K}/\mbox{obo}.$   $415\mbox{-}5444.$ 

'94 COACHMAN Econoline, RV, 250-Ford, 56K miles, gen. refrig, dc & propane, 2 a/c, sleeps 4, 1 ba., kitchen, new tires, has all repair paperwork, exc. cond., \$20,000. 892-7140. '95 FORD Taurus LX wagon, only 56K mi.,

deep green/tan leather, loaded, moonroof, elect. temp. control, ABS all-disc brakes, dual airbags, pwr. front seats, third seat, exc. cond., \$6,900. 626/798-2925.

'93 HONDA Accord 10th Aniv, green, 4 dr., a/c, 144K mi., priced to sell, \$3,900. 909/896-7396, Alex.

'85 KOUNTRY Lite 5th wheel trailer, 30 ft., orig. owner, alum. frame, 13.5K btu a/c, side bath, microwave, new tires & water pump, sleeps 6, exc. cond., kitchen equip. included, \$5,800/obo. 626/963-5727.

'93 MAZDA Miata, vg cond., one owner, low miles, many extras, \$4,500. 626/351-9150. '90 MERCURY 4 HP outboard, 2-stroke motor, internal tank, great for Dinky, \$499. 661/255-

'90 NISSAN 240 SX, silver, vg cond., 69K mi., a/c, pwr., tilt wheel, new stereo w/CD, \$4,000/obo. 768-4379.

'99 OLDSMOBILE Cutlass GLS, under 60K mi., 4 door silver with gray leather interior, loaded, alloy wheels, power everything, great cond., \$8,500/obo. 626/287-8047.

'96 PONTIAC Firebird/Formula, 3.8L V6, dark grn mtllc./graphite cloth, 53,559 mi., 1 owner, 16" alloys, limited slip, 4 spd. auto, pwr. windows, 10-spkr. sound, pwr. ant., dash and car cover, V8 package w/o V8, all receipts, 88,700. dahun@pacbell.net or 661/252-9777, eves. and weekends.

'95 SAAB 9000CS hatchback, 4-dr, black w/ tan leather interior, 97K mi., 5-spd, AM/FM+cassette+6-CD changer; sunroof, great cond., \$6,200/obo. 323/664-2672. '02 SUBARU Forester L, take over lease, small

all wheel drive SUV, only 4,500 mi., showroom condition, red with beige interior, moving to NYC, no down payment, 38 months at \$362.74, 12,000 miles/year. will subsidize payments. 949/248-4201, Sandy or 626/695-

'91 TOYOTA Tercel LE, 1 owner, very reliable, economical to drive, clean, well maintained, a good student or second car, white, 4 dr., 5-spd stick shift, am/fm/cass., only 91K miles, 2WHP768, \$2,000/obo. 323/222-0485, Joe. '98 TOYOTA Sienna van, earth-toned exterior and interior, 2 sliding doors, captain chairs, loaded w/features, alarm & keyless entry, low mileage, exc. cond., \$13,500. 626/850-4378. '98 TOYOTA Tacoma PreRunner Xtra Cab, 4 cyl, auto, 77K mi., a/c, am/fm/cassette, dual front air bags, running boards, shell, bed liner, very good cond., \$10,500/obo. 626/296-9073.

'97 HONDA Valkyrie motorcycle, exc. cond., extra chrome, garage kept, purple/white, studded seats, 2 seats and backrest, leather bags, many accessories, 23K mi.,see to appreciate. \$7,600. 957-2852.

#### Lost & Found

FOUND: Bicycle tail light, on Arroyo hiking trail on May 1. 626/395 1857, Steve. FOUND: Sheet metal, small roll, shiny perhaps stainless steel, roughly 0.005" thick, 1/2" wide, 2" in diameter; found on sidewalk near Bldg. 318. Ext. 4-6271, Van Snyder.

DOG, female shepard mix needs an active, loving home, 1.5 years old, great, fun, playful. 370-4680.

ROCKING RECLINER, rust colored, fabric is faded but in good-to-fair condition, rocker and recliner work great, non-smoking house in Ontario. 909/948-9942.

#### Wanted

APARTMENT sought by JPL employee, 1 bd., in greater Pasadena area, need from mid- or late May for at least 1 year, probably more. 909/920-0044 or cell 716/553-8047, Kevin. CAT FURNITURE, carpeted, good cond., <\$25. scuddy717@yahoo.com.

DESK, maple, roll top, maple dresser, mapleframed full-length freestanding mirror or large maple-framed mirror to hang on wall. 248-2602 Patricia

MATH TUTOR, Jr. & Sr. High school level classes (geometry, algebra, SAT math, etc.), eves./ weekends. 888/784-1639, David, leave

SPACE INFORMATION/memorabilia from U.S. & other countries, past & present, for personal use. 790-8523, Marc Rayman.

VANPOOL RIDERS, for Lancaster/Palmdale/ Littlerock/Acton area, van leaves Angeles Forest

Park & Ride at 5:30 a.m. and leaves from JPL at 4 p.m., \$150. Ext, 3-0505, Frank Shanklir

ALTADENA guesthouse, 1 bd., 1 ba., restored 1930s craftsman cottage, clean, priv. fenced yard/garden w/fruit trees, new central a/c heat, yanugarden with trees, new central az near, wainscoting in kitchen, vintage Wedgwood stove, period wood cabinets, pantry, walk-in closet, new tile in kitch., window box over sink, ap-prox. 2 mi./JPL, no pets, safe st. parking, waterrefuse removal included, security deposit \$1,800, 1-year lease, \$1,380. 376-5068.

MONTROSE, detached 2 rm., .75 ba., garage apartment, heater and a/c, utilities included, no pets, \$450 + deposit. 957-6821. PASADENA, nice Upper Hastings Ranch home,

3 bd., den, 2 ba., w/pool, spa, large yd., over-looking golf course, remodeled kitchen and baths, 1-yr. lease required, furn. \$3,600, unfurn \$3,200, incl. gardener and pool service, avail. 6/28. 626/351-9641, leave message.

PASADENA apt., 2 bd., 2 ba., close to JPL and Caltech, central air/heat, laundry, 2 parking spaces, \$1,100. 626/304-0065 or 626/676-6307, cell.

PASADENA, 3 bd., 1 ba., formal dining rm., living rm., family rm., laundry, garage, orange trees and roses, \$2,000. 626/794-1598.

PASADENA, spacious 2 story condo, 3 bd., 2.5 ba., prestigious community, beautiful inter., bright ktch., prof. landscape, ctrl. air & heat, close to shop., cozy LR w/FP, end unit, frml DR, hdwd, flrs., immac. cond., close to schls., \$1,750. 626/396-9024.

SAN MARINO house, 3 bd., 2 ba., 2-car gar. w/automatic opener, newly painted, remodeled kitch., dishwasher, a/c, laundry hookups, spacious family rm. overlooking yd, fireplace, close to bus, exc. neighborh'd + school district, water/trash/gardener incl., \$2,850. 626/576-7333.

#### Real Estate

GLENDALE townhouse, desirable area, 2 bd., 2.5 ba., 2-car garage, built 1995, 6 total units. low \$135 assoc. fee for water/insurance/trash/ maint, granite counters, tile/Prego except one bd., exc. cond. 9.3 miles to JPL., \$289,000, contingent to seller closing on already selected home, photos: http://www.letscheerup. com. 500-0507, agent, ask for JPL discount, or home@letscheerup.com, 246-7847, seller. MT. WASHINGTON house, next to Glendale/ M1. WASHINGTON house, next to Glendale/ Pasadena/Eagle Rock/Occidental College, 2,000 sq ft., large custom 3 bd., 2.5 ba., 2-car garage, lots of storage, excellent Mt. Washing-ton elementary school, 12 minutes from JPL, canyon view, quiet neighborhood, available summer 2003, ask for JPL discount, virtual tour at http://www.circlepix.com/site/tour/index.htm?searchtourid=63-39461, \$450,000.

#### Vacation Rentals

626/403-0446.

BALBOA ISLAND, cute beach apt., fully furn., 2 bd., 1 ba., patio, washer/dryer, parking, slps. 5, steps to bay, avail. weekly thru summer, \$1,000-\$1,500/week depending on week. 626/351-9641.

BIG BEAR LAKEFRONT, lux. townhome, 2 decks, tennis, pool/spa, nr. skiing, beaut. master bd. suite, slps. 6. 949/786-6548. CAMBRIA, ocean front house, sleeps up to 4, excellent view. 248-1102.

COSTA RICA, Pueblo Real, Quepos, 2 bd., 2 ba. condo, fully eq'p'd kitchen, tv, vcr, slps. 6, air, remodeled, lg. pool, tennis, nr. Manuel Antonio, next to river w/mangroves & monkeys, close to beach, JPL rates, see at Photoisland. com, Andalusian password "condo." luisalfaro@earthlink.net or 760/723-8522.

HAWAII, Maui condo, NW coast, ocean front view, 25 ft. fr. surf, 1 bd w/loft, compl. furn. phone, color TV, VCR, microwave, d/w, pool, priv. lanai, slps 4, laundry fac., Low Season rate \$105/nite/2, High Season rate \$120/ nite/2, \$15/nite/add'l person. 949/348-8047,

or jackandrandy@cox.net. MAMMOTH, Snowcreek, 2 bd., 2 ba., +loft, MAMMOIH, Snowcreek, 2 Da., 2 Da., +10ft, slps 6-8, fully eq'p'd kitch. incl. microwave, D/W, cable TV, VCR, phone, balcony w/mtn. vw. Jacuzzi, sauna, streams, fishponds, close to Mammoth Creek, JPL discount. 626/798-9222 or 626/794-0455 or valerie@gps.caltech.edu.

OCEANSIDE, on the sand, charming 1-bd. condo, panoramic vw., walk to pier/harbor, pool/spa, game rm., sleeps 4. 949/786-6548.

ROSARITO BEACH condo, 2 bd., 2 ba., ocean view, pool, tennis, short walk to beach on priv. rd., 18-hole golf course 6 mi. away, priv. secure parking. 626/794-3906. SANTA CRUZ, fully furn. house nr beach & har-

bor, 2 bd., 2 ba., lg. deck, modern kitch., washer/dryer, walk to gd. restaur. & beach, slps. 4, \$900/wk. 831/464-5031 or wns111@pacbell.net. VENTURA beach house, 3 bd., 1 full ba., located near Marina Park, with TV, VCR, CD, washer-dryer, enclosed landscaped backyard with covered porch and sun deck, BBQ, short walk to beach on private rd. 248-0521.

#### Editor Mark Whalen Design + Layout Adriane Jach, Audrey Steffan/ Design Services

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